Chapter 9
UTILITIES

Introduction

Utilities include all public or private service lines or equipment and railroads. Highways and utilities share the common purpose of public service and in many cases they share the same corridor. Utilities generally are not a controlling factor in the design of a highway project, but they are an important consideration.

Utilities transport or deliver power, communications, gas or liquids, and rail (freight and passengers). Their size or load varies for long-distance transmission lines (service connections between Urban/Metropolitan areas) and shorter-distance distribution lines (locally controlled customer service). These facilities can also include substations, pumping stations, metering stations, siphons, and other appurtenances. It is usually much easier to deal with the rearrangement of a distribution facility than a transmission facility due to cost factors, massive structures affected, and potential for widespread service interruptions. However, long distance transmission lines are usually located within utility-owned easements, while shorter distance distribution facilities usually share highway rights-of-way or private property in densely developed locations with few options for rearrangement. It is also easier to rearrange railroad (RR) siding tracks than main lines. The designer should be aware of the differences early in project development.

The procedures for administering utility matters are outlined in the *Utility Accommodation Manual* [UAM (10)] published by the New Hampshire Department of Transportation (NHDOT). This guide applies to alterations, construction, and licensing of public or private utilities on any highway under the jurisdiction of the NHDOT Commissioner. The UAM (10) also applies to compact areas wherein local government may grant the NHDOT temporary jurisdiction through agreement.

The UAM (10) designates appropriate responsibility, minimum standards, reimbursement regulations, and licensing procedures for new or adjusted utilities.

This chapter will provide the designer with an overview of the utility adjustment process. The UAM (10) describes the working procedures and details.

General

Almost all projects will have utility facilities located within the project limits. Utility adjustments may not be necessary, but it is still necessary to notify the utility owner of proposed work and show the utility on the plans even if no adjustment is necessary. Early coordination between the utility and the Design Services, Utilities Section will evaluate utility impacts and the extent of the work needed by the NHDOT or the utility.

Jurisdiction

Utility ownership varies with purpose and jurisdiction. Major utility companies extend across State lines but they must comply with the regulations of the local political jurisdiction.

Utilities may be wholly owned and administered by a municipality. Control of public utilities is exercised by the Public Utilities Commission (PUC) of the State of New Hampshire, exceptions being municipally-owned utilities within municipal boundaries or urban compact, cable television facilities, and some minor privately owned utility facilities.

The PUC regulates activities, within the State, of utilities defined in RSA 362:1. Pursuant to RSA 363:17-a, the PUC acts as the arbiter between the interests of the customer and the interests of the regulated utility.

A utility that occupies State rights-of-way does so under sufferance with the expressed or implied permission of the State. Instances of prior ownership sometimes arise but such conditions are rare. Locations of facilities within the State's ROW are subject to Department approval. Approval provides the utility with assurance that its plan complies with highway standards. Information about programmed highway projects that may impact existing utilities and/or affect new utility work is provided by the NHDOT.

Reimbursement

Usually, reimbursement for relocations is allowed if a utility has a prior right to occupy the Right-of-Way, occupies a legal easement, occupies private property owned by the utility, the Attorney General's Office issues an opinion obligating the State to bear any or all cost of relocations, or if it is a municipally-owned utility occupying municipally held Right-of-Way, property, or a municipally maintained roadway. Municipally owned underground utilities within State Right-of-Way, are eligible for partial reimbursement (trench, backfill, and abandonment of the existing facility). Generally, other situations are not eligible.

The following is a list of sample situations used in determining payment responsibilities for utility relocations:

A. THE STATE WILL PAY FOR THE RELOCATION OF UTILITIES UNDER THE FOLLOWING SITUATIONS:

1. The facility occupies private property by rights granted to the owner of the utility by an easement; or the utility owns the property.
2. The facility occupies a highway Right-of-Way where the utility had the right of easement prior to the acquisition of the Right-of-Way by the State or Town or prior to 1905 when the Department was incorporated, and the utility has not been compensated for easement rights.
3. The facility occupies a highway Right-of-Way and the right of easement was reserved to the utility in the highway return of layout.
4. A municipally owned utility is located within the Right-of-Way of a street or road owned by the municipality, provided that the utility is not required by law to relocate its facilities at its own expense.
5. The Attorney General's Office issues opinion obligating State to bear any or all costs of relocation.
6. The facility is located on US Government land such as Forest Service with a permit or lease. Federal agency may participate - See FAPG 23 (3) CFR 667.

7. A utility other than Power, Telephone, RR, or TV claims rights by adverse possession (or prescriptive right) (requires Attorney General's opinion).

8. Structural framing for conduits and/or pipelines on bridges (spacing as required by utility for their facility, final spacing to be determined by the Department as appropriate for the particular bridge). Specifically, intermediate K-frames, holes through K-frames for hangers and rollers, blockouts through bridge backwalls, reinforcing steel modification for sleeves through backwalls, and sleeves through the backwall over and/or under approach slabs, and 1.5 m beyond.

9. Preliminary engineering and inspection for facilities under State's obligation.

10. Per RSA 228:22 the trenching, backfill, and book value of facilities replaced on municipally owned underground utilities. (This applies to locations where a municipal utility does not qualify for full reimbursement under 1 and 4 above.) Note: Hydrants are not considered an underground facility; plumbing to a hydrant can be included in book value. If any portion of a service line is owned by the municipal utility, that portion would be eligible for participation by the State.

B. <u>THE UTILITY WILL BE RESPONSIBLE FOR COSTS OF THE RELOCATION OF THEIR FACILITIES UNDER THE FOLLOWING SITUATIONS:</u>

1. The facility, other than municipally owned, located in highway Right-of-Way with or without permit or license.

2. Power, Telephone, Communications or TV facilities located on private property without easement or ownership of property.

3. A municipally owned above ground utility located in State owned Right-of-Way without:

   a) an easement

   b) reservation of easement in return of layout

   c) except as noted in A-10 above

4. A utility facility located on private property with a lease or rental agreement and the property is acquired for highway and Right-of-Way (some cases may require opinion of Attorney General).

5. When Attorney General's Office issues an opinion obligating the utility to bear all costs.

6. Conduits and/or pipe lines on bridges and supplemental supports including supporting mechanisms attached to structural members of bridges, hangers, rollers, alignment guides, and inserts, which attach to Department supplied sleeves (except as noted in part A-8). Access facilities (cat walks, ladders or special ramps) for conduits and/or utilities on bridges. All Preliminary and Construction Engineering. All designs are to be coordinated with the Department.

7. Inspection of all service connections where not impacted by the Department's required construction.

Cases may have to be evaluated individually and may need legal opinions from the State's Attorney General's Office. The primary basis for the determinations is the first party to have a compensable interest in the area of concern or the party that has the prior or senior right. If the utility has prior rights, it is eligible for compensation. Each case must also be evaluated to determine if either party has ever sold or relinquished their rights by some other means. Some companies have voluntarily relinquished easement rights and relocated their facilities out of their easements and into a highway Right-of-Way. In such cases, the State is not liable for any future relocation costs.

Responsibility

Utility

The utility has the responsibility for complying with local, State and Federal laws and regulations of the USDOT (FHWA), PUC, the State, the NHDOT, and associations that sponsor national safety codes.

Applicable codes or standards recognized by the State include the following:

- National Electrical Safety Code;
- American Water Works Association Standards and Specifications;

ANSI Standard Code for Pressure Piping of the American National Standards Institute:

  + ANSI B 31.1, Power Piping;
  + ANSI B 31.3, Petroleum Refinery Piping;
  + ANSI B 31.4, Liquid Petroleum Transportation Piping Systems;
  + ANSI B 31.8, Gas Transmission and Distribution Piping Systems;

- Recommended Practice for Liquid Petroleum Pipelines Crossing Railroads and Highways by the American Petroleum Institute;
- Natural Gas Pipeline Safety Act of 1968; and,
- Federal Aid Policy Guide (FAPG) Code of Federal Regulations - Title 23 (23 CFR), 49 (49 CFR) as amended.

The utility is obligated to provide plans, estimates, reviews, field locations, and liaison personnel to work with the Design Services/Utilities Section of the Bureau of Highway Design as noted in the Procedure Section.

Bureaus of Highway Design and Bridge Design

The Design Services/Utilities Section staff provides the coordination between the utility and the Bureaus of Highway Design, Bridge Design, Public Works, Rail & Transit and the Operations Division (including Maintenance and the Bureau of Traffic), who may deal with utilities issues.

The Utilities Section maintains contact with affected utility companies. Information transfer, conferences, or other meetings should not be arranged without the presence or advice of the Utilities Engineer. The Utilities Engineer or Utility Coordinator is responsible for these activities:

- Obtainment of utility information as needed;
- Coordination of utility issues on highway projects including all contact with utility owners, railroads, and other involved government agencies and the project design team;
- Temporary and Permanent lighting design;
- Review of utility and railroad relocation arrangements;
- Determination of liability for adjustment costs;
- Preparation and review of estimates related to utilities or railroads;
- Preparation of force account agreements;
- Preparation of Use and Occupancy agreements;
- Processing reimbursements;
- Construction coordination; and,
- Modernization, reconstruction, or elimination of railroad grade crossings bridges, sidings, corridors and signals.

The designer is responsible for furnishing plans and project information to the Utilities Section for coordinating purposes as soon as plans are available. The scheduling guidelines and flow diagram later in this chapter show the coordinating/relocation work necessary to properly process utility adjustments. The flow diagrams in Chapter 2, Project Development, show the integration of utility coordination into the project development process. Considerable lead time is always required to coordinate utility relocations, particularly when force account agreements are necessary (See "Procedure" section for scheduling guidelines and flow charts).

Bureau of Construction

The Bureau of Construction's involvement begins early in the project development utility and railroad coordination process, increasing to total responsibility, with the preconstruction conference where the contractor, the Contract Administrator, utilities, and/or railroad representatives, and Utility Coordinators meet with the District Construction Engineer to review project requirements and schedules of operation. In addition to construction

inspections, the Construction Contract Administrator monitors utility force account work and receives periodic utility reports from the utility if the work is reimbursable.

Bureau of Right-of-Way

The relocation of utility facilities that exist on private property are reimbursed in accordance with Right-of-Way Relocation requirements. The Bureau of Right-of-Way is responsible for the relocation negotiation. The Utilities Section will assist in the coordination and will review cost estimates and agreements as requested.

See Chapter 10 - ROW, for additional information.

Procedure

Highway Projects

The flow diagram (Fig. 9-1), and utility Relocation Plans shows the related activities required for processing utility and lighting force account agreements. Highway lighting projects are discussed later in this chapter. Procedures for approval are described in Section 14 of the UAM (10).

When a project's scope of work has been defined (with or without conceptual design), the Designer must meet with the Utilities Engineer/Coordinator to discuss the project's utility concerns and determine the number of sets of plans needed to begin the coordination process.

As the project develops, all known utilities must be shown on the plans and cross-sections. Refer to the UAM (10) and to Volume 2 of this manual for the preferred symbols and plan format.

As projects progress, it is the responsibility of the Design Team or the Consultant Plan Review Engineer to keep the Utilities Section informed of progress. When all existing utilities have been shown on the plans and cross sections, along with other design features such as drainage, pavement structure (top and bottom template), structure bases, etc., the information should be reviewed with the Utilities Section to determine conflicts and their resolutions. Changes from the original concepts should also be reviewed with the Utilities Section.

On Non-Exempt projects, one (1) week prior to the advertising of a project, copies of the design plans, proposals, and estimates, together with required permits, are transmitted to FHWA for review. Copies of utility agreements with companies affected by the proposed project and a utility certificate are included. The agreement made with each utility company describes the scope of the work involved, special handling required, and method of payment for work performed (usually on a force account basis). The work is usually shown on the design plans.

The Utility Certificate lists all companies affected, whether the required work is to be reimbursable to the companies involved or not, and that all utility work will be coordinated with the physical construction of the project.

Lighting

Lighting for a highway facility, temporary or permanent, is the responsibility of the Utilities Section.

Permanent

Lighting installations are typically included with the highway contract, but in some cases there may be individual lighting projects. They may be built by contract, by utility forces, or in some instances by State forces. Towns or cities may request individual lighting and/or have their lighting incorporated into the highway contract, and in both cases the power charge responsibility for operating the lighting system is borne by them. For individual lighting projects, associated materials and installation costs are the responsibility of the City or Town. For lighting projects incorporated into a highway contract, the Utilities Section reviews the request and determines if the highway facility warrants lighting. If so, the State will participate in the lighting system up to the cost value of the NHDOT's standard highway lighting specifications. Special lighting (ornamental) beyond that cost value or if lighting is not warranted, the cost is borne by the City or Town. In most cases, for standard highway lighting, ownership and maintenance of the lighting system is turned over to the area's franchised power company. For ornamental lighting, that responsibility is borne by the City or Town and in some cases, the NHDOT's Maintenance District Office.

Temporary

Temporary lighting is designed or reviewed by the Utilities Section for all highway projects. The design of temporary lighting is determined by the project's Traffic Control Plans (maintenance of traffic during construction) and construction phasing sequence. The cost of temporary lighting is included in the contract.

Recommended references for highway illumination information are: *An Informational Guide for Roadway Lighting* (27), *Safety Design and Operational Practices for Streets and Highways* (28), and *Roadway Lighting Handbook* (29).

State Force Account Projects

Utility companies involved in projects constructed by State forces coordinate their work with the District Maintenance Engineer. The same laws and regulations apply to the procedure except that the highway work is performed by State forces and not by a contractor.

Railroad Grade Crossing Projects

The Federally sponsored Railroad-Highway Grade Crossing Program enables FHWA to fund grade crossing improvements. The State has an inventory of grade crossing locations listed by priority index as an aid to selection of Federal-Aid projects. A more complete priority rating is established by adding to the priority index information received from Surveillance Team reports, railroads, towns, cities and State maintenance forces, and police accident reports.

All Railroad grade-crossing safety improvements are coordinated with the Rail-Highway Crossing Coordinator.

Railroad-highway sight distance problems are discussed in Chapters 3 and 4. In New Hampshire, it is frequently difficult to assure an adequate sight distance triangle, therefore the designer usually relies upon traffic control devices to provide adequate safety.

Railroad grade crossing projects require the same plan development process and utility coordination efforts as the more common highway projects. Railroads prefer to have the road closed to traffic when grade crossings are reconstructed. This preference should be considered in the development of the Traffic Control Plan (TCP).

Railroad Grade Separation

The grade separation is the safest method of accommodating both highway and railroad traffic movements. It is also the most expensive. Justification is based on warrants that take into account the traffic volumes, accident history, potential hazard of the location, and other factors. Arrangements for grade separations sometimes require an adjudictory hearing to resolve issues between the NHDOT and the railroad. See Chapter 3 for vertical clearance to be maintained for grade separations.

Utility or Railroad Force Account Projects

These projects are where all construction is performed or contracted by the utility or railroad.

Working Arrangements

The step-by-step procedure for coordinating various kinds of contracts and agreements is found in the UAM (10) Appendix. The flow diagram (Appendix 9-1) later in this chapter illustrates the steps.

A Force Account Agreement is a contract between the State and a utility or railroad for the utility or railroad to perform work using its forces or its contractor's forces. The agreement states the method and extent of reimbursement.

Location and Design

Utility and railroad facilities are usually located and designed by the owners, subject to approval by the State and FHWA if they affect highway operations. Highway lighting projects are usually designed by the Utilities Section, coordinating with others in the NHDOT.

The UAM (10) Sections IV through IX are the criteria to use in checking existing or proposed locations for compliance with the State requirements.

In addition to the material contained in the UAM (10), the following are useful designer references:

- *Accommodation of Utility Plants Within the Right-of-Way of Urban Streets and Highways: Manual of Improved Practice* (30);
- *Accommodation of Utility Plants Within the Rights-of-Way of Urban Streets and Highways: State-of-the-Art* (31);

- *Manual on Uniform Traffic Control Devices (MUTCD)* (13);
- *Safety Design and Operational Practices for Streets and Highways* (28):
- *Railroad-Highway Grade Crossing Handbook* (17);
- *Factors Influencing Safety at Highway Rail Grade Crossings* (32);and,
- *Federal-Aid Policy Guide (FAPG)* (12): Subchapter G, Part 645 - Utilities and Part 646 - Railroads.
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Traffic Control

Public safety is the first consideration in all highway operations. The utility companies and railroads are just as responsible for safe maintenance of traffic through their work areas as roadway contractors are for maintenance of traffic through theirs.

Projects designed by the Utilities Section will include a TCP developed by the Utilities Engineer and coordinated with the Chiefs of Final or Consultant Design.

UTILITY RELOCATION PROCESS

(SCHEDULING GUIDELINES)

DESIGN PHASE

1. 10-15% Design Completion - Utility Coordinator will review plans, field inspect if warranted and practical (with utilities if needed), outline liabilities, discuss ROW situation with utility companies. Send plans requesting verification of existing facilities and ROW easement information.

2. 20-25% Design Completion - The Utility Coordinator will discuss with the utilities anticipated relocations; obtain rough relocations, schedules, and costs; outline liabilities and; address specific utility concerns (Note ROW needs, including replacement of easements, and site preparation). Provide Design team with as much information as possible about lighting, including costs. (A meeting with utilities affected to be held as soon as practical after the Public Officials Meeting.)

3. 25-30% Design Completion (Public Hearing Stage) - If cost liability likely to be a problem, the Coordinator shall follow-up with discussion with Project Manager and identify special ROW or scheduling problems. The Coordinator shall follow-up with notification to utilities as required to inform utilities of project status. The Utilities Engineer will issue a Utility Report defining the utility issues identified to date and the utility coordination progress to appropriate Design Section Chief and Project Manager.

4. 30-50% Design Completion (Slope and Drain. and ROW plan phases) - The Coordinator will review the Public Hearing transcript, (if any commitments impacting utility relocations, notify utility companies, i.e. limited tree trimming etc.,) send 2nd verification plans if required.

5. 60% Design Completion - Establish procedure to resolve utility conflicts; review preliminary relocation plans; lighting identified; schedule constructability reviews with Bureau of Construction.

6. 65-80% Design Completion (Preliminary PS&E at 80%) - The Coordinator will: discuss conflicts and resolutions with design team, regularly communicate with utility representatives and; finalize relocation concepts, and schedules. The Coordinator shall furnish the team with estimated costs and the status of Force Account Agreements. Lighting design and costs to be developed and furnished to design team. The Coordinator shall hold pre-utility meetings as needed; and coordinate relocation work with Construction and ROW. At 70%, the Utilities Engineer will issue a revised Utility Report defining the utility relocation issues; and identify to date the utility coordination progress.

7. 80-95% Design Completion to Advertisement (PS&E Stage) - The Coordinator will complete and process Force Accounts Agreements; attend the Pre-Advertisement Coordination Meeting; and, maintain coordination with Construction and the Utility Companies.

8. 2 weeks prior to advertisement, meet with all utilities for final design review of proposed work schedules and commitment dates. The District Construction Engineer or a designee to be included.

9. 100% Design Completion - Begins the Construction Phase.

UTILITY RELOCATION PROCESS

(SCHEDULING GUIDELINES)

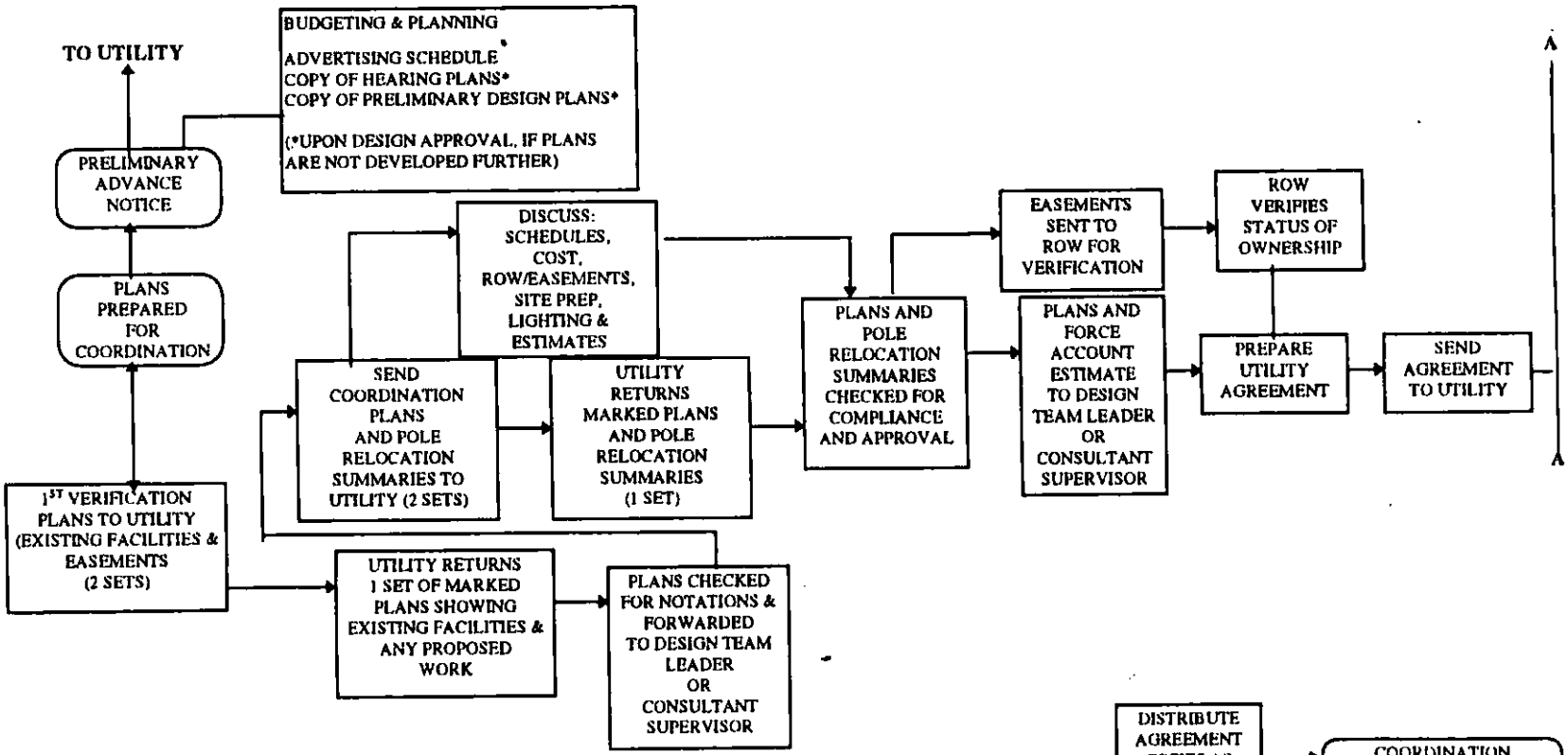
CONSTRUCTION PHASE

1. Prior to the preconstruction conference, the Utility Coordinator should review the project with the Contract Administrator.
2. The Utility Coordinator with the Contract Administrator will decide if a separate preconstruction meeting is needed depending on the complexity and scheduling constraints of the project.
3. The Contract Administrator invites the utilities (via the Utility Coordinator) to the Preconstruction Conference. (Appropriate representation from the utilities is essential.) (Hard copy of invitation is sent to the Utility Coordinator by the Bureau of Construction and invitations by telephone to the individual utilities performed by the Utility Coordinator.)
    - The Utility Coordinator will attend the Preconstruction Conference. (If only minor utility involvement for the project, the Utility Coordinator will review the need to attend the meeting with the Contract Administrator.)
    - The Contractor defines their work schedule and confirms who the utility contacts are.
    - The Utilities confirm their completion target dates.
4. The Utility Coordinator will assist the Contract Administrator in implementing the previously approved utility schedule.
5. Minutes of the Preconstruction Conference are to be copied to the NHDOT Project Manager.
6. The Contract Administrator assigned to the project will conduct a construction utility meeting prior to the utility start date (utility coordinator to attend) to verify utility commitments. (For projects that utilities have started work or intend to start immediately, the Preconstruction Conference shall be considered the meeting.) The Contract Administrator is to write the conference report and copy appropriate utility management and the NHDOT Project Manager.
7. Contract Administrator will notify the Utility Coordinator that the utility work has begun.

8. Contract Administrator and Utility Coordinator will agree on a way to communicate weekly progress. If a problem arises, contact Utility Coordinator immediately.
9. If the schedule, as defined in the Prosecution of Work is not met, contact appropriate District Construction Engineer and Chief of Design Services.
10. Contract Administrator will notify Utility Coordinator when work is complete.

APPENDIX LIST

APPENDIX 9-1
UTILITY COORDINATION, RELOCATION AND FORCE ACCOUNT PROCESS - FLOW DIAGRAM



NOTE: ALL COORDINATION IS PERFORMED BY THE DESIGN SERVICES SECTION WITH DESIGN TEAM LEADER, CONSULTANT SUPERVISOR, PROJECT MANAGER, OR OTHER INVOLVED BUREAUS, WHEN REQUIRED;

RAILROAD FORCE ACCOUNT PLANS ARE PROCESSED IN THE SAME MANNER; AND,

PROJECTS DESIGNED BY UTILITIES SECTION SUCH AS RAILROAD CROSSINGS AND LIGHTING INSTALLATIONS WILL FOLLOW THE FLOW DIAGRAMS, CHAPTER 2.

Appendix 9-2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DESIGN

UTILITY REQUEST

FROM: _____ **DATE:** _____

_____

TO: Charles R. Schmidt, P.E.
Chief of Design Services

ATTENTION: _____

PROJECT: _____ **FEDERAL NO.:** _____
(Chargeable by Design Services) **STATE NO.:** _____

PROJECT DESCRIPTION: _____

_____

_____

Type of Request ☐ Metric ☐ English

Scale _____

☐ Initial Utility Verification

☐ Utility Reverification

☐ Utility Relocation [Programmed Utility Relocation to be complete by _____]

☐ Lighting Design ☐ Temporary ☐ Permanent

☐ Other

Completion Date Requested: _____

Anticipated Advertising Date: _____

Attachments: ☐ _____ Sets of Existing Detail Plans

☐ Location Map

☐ Other

COMMENTS: _____

_____

_____